IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

AFFYMETRIX, INC., a Delaware corporation, Plaintiff/Counter-Defendant, v. **ILLUMINA, INC.**, a Delaware corporation, Defendant/Counter-Plaintiff.	Civil Action No.: 04-901 JJF **PUBLIC VERSION**

OPENING BRIEF IN SUPPORT OF ILLUMINA'S MOTION FOR SUMMARY JUDGMENT OF INVALIDITY OF THE ASSERTED CLAIMS OF THE '531 PATENT

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NATURE AND STAGE OF THE PROCEEDINGS

Plaintiff Affymetrix, Inc. ("Affymetrix") filed suit against Defendant Illumina, Inc. ("Illumina") on July 26, 2004. (D.I. 1) In its complaint, Affymetrix accuses Illumina of infringing U.S. Patent Nos. 5,545,531; 5,795,716; 6,355,432; 6,399,365; 6,607,887; and 6,646,243. Illumina filed its Answer and Counterclaims denying, *inter alia*, that its products infringe and counterclaiming that the asserted patents are invalid under 35 U.S.C. §§ 102, 103 and 112. (D.I. 10) Illumina obtained leave to file and filed its Amended Answer and Counterclaims on February 17, 2006, adding, *inter alia*, allegations of unenforceability due to inequitable conduct. (D.I. 217) Subsequently, Affymetrix dismissed with prejudice one of the asserted patents — U.S. Patent No. 6,607,887 — from the litigation. (D.I. 266)

The parties have completed fact discovery and *Markman* briefing on disputed claim terms of the patents-in-suit. The parties will proceed with expert discovery following a claim construction ruling from the Court.

SUMMARY OF THE ARGUMENT

In this case, Affymetrix alleges that Illumina infringes claims 1-4 of U.S. Patent No. 5,545,531 ("the '531 patent"). The claims of the '531 patent were not, however, new when allegedly invented. To the contrary, each of the claims is invalid under 35 U.S.C. § 102 as anticipated by several prior art references. For purposes of this summary judgment motion, Illumina relies on only one of these invalidating prior art references — *i.e.*, PCT Patent Application WO 93/17126 ("the '126 PCT Application").

The '126 PCT Application discloses the work of Drs. Alexander Chetverin and Fred Kramer relating to methods of using oligonucleotide arrays to conduct hybridization experiments to study nucleic acids. Their application includes a detailed description of various

array configurations, including an array that they termed a "survey array." The description of this work in the '126 PCT Application simply and clearly discloses each and every element of the '531 patent claims. In its discovery responses in this case, Affymetrix has not even contested that the '126 PCT Application is prior art to the '531 patent claims, and admits that the '126 PCT Application discloses all but two elements of the claims. (*See* Ex. 5, at 3) In reality and as discussed below, the '126 PCT Application discloses all elements of the asserted claims. Accordingly, the Court should grant Illumina's motion for summary judgment of invalidity of claims 1-4 of the '531 patent for anticipation under 35 U.S.C. § 102.

STATEMENT OF FACTS

I. THE '531 PATENT.

On June 7, 1995, Richard P. Rava, Stephen P. A. Fodor and Mark Trulson filed a patent application with the United States Patent and Trademark Office, entitled "Methods for Making a Device for Concurrently Processing Multiple Biological Chip Assays." (*See* Ex. 2) On August 13, 1996, this patent application issued as the '531 patent.[1] The '531 patent generally relates to a biological chip plate with multiple arrays of probes separated from one another by a "body" or "a material resistant to the flow of a liquid sample." As Affymetrix explained in its opening claim construction brief, "a plurality of microarrays on a support permits the hybridization of many different samples (each contained in a separate well) in a single experiment." (*See* D.I. 243, at 6)

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The '531 patent contains four claims — all of which Affymetrix has asserted against Illumina in this litigation. Claim 1 is reproduced below:

> 1. A method for making a biological chip plate comprising the steps of:
>
> (a) providing a body comprising a plurality of wells defining spaces;
>
> (b) providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner;
>
> (c) attaching the wafer to the body so that the probe arrays are exposed to the spaces of the wells.

In the parties' claim construction briefing, the parties identified two terms of the '531 patent claims for construction: "probe array" and "arranged in a spacially defined and physically addressable manner." (*See* D.I. 243, at 21; D.I. 240, at 20-21) As will be explained below, under either party's constructions, the '126 PCT Application discloses each and every element of the asserted claims of the '531 patent.

II. THE '126 PCT APPLICATION.

On February 19, 1993, Drs. Chetverin and Kramer filed an International Patent Application, entitled "Novel Oligonucleotide Arrays and Their Use for Sorting, Isolating, Sequencing, and Manipulating Nucleic Acids," under the Patent Cooperation Treaty. (*See* Ex. 3) This application was assigned the International Publication Number WO 93/17126 ("the '126 PCT Application"). The '126 PCT Application published on September 2, 1993 — more than one year before the June 7, 1995 filing date of the application for the '531 patent. (*See id.*)

In the '126 PCT Application, Drs. Chetverin and Kramer disclose various methods for making different formats of arrays to study reactions of nucleic acids through hybridization. For instance, the '126 PCT Application describes and depicts one array format

called a "survey array." (*See id.*, at IAFP13445) One embodiment of a "survey array" is described as an array that has multiple arrays located on its surface and each of the multiple arrays is located in a separate section such that each array is physically separated from each other. (*See id.*) Because there is physical separation of the arrays, the "survey array" allows for multiple hybridization reactions to be performed simultaneously without mixing occurring between each section:

> Although not necessary, it is preferable to have the survey arrays be as compact as possible. It is anticipated that surveying will be advantageously accomplished simultaneously for many or all wells of a partialing array by utilizing a sheet on which miniature survey arrays have been 'printed' in a pattern that coincides with the arrangement of wells in the partialing array, in a manner similar to that shown in Figures 6 and 7. Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42. The pattern of arrays 42 corresponds to the pattern of wells 31a, whereby all wells 31a can be surveyed simultaneously.[2]

(*See id.*, at IAFP13445) This and other descriptions of a "survey array" in the '126 PCT Application anticipate the asserted claims of the '531 patent.

A. The '126 PCT Application Discloses Multiple Oligonucleotide Arrays On A Wafer.

The '126 PCT Application defines an "oligonucleotide array" as an array on which different oligonucleotides, or probes,[3] are immobilized in predetermined locations:

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[2] Although not required to prove anticipation, it is remarkable how similar this description in the '126 PCT Application is to the description Affymetrix provided just a few months ago of the supposed advantage of the alleged invention of the '531 patent. According to Affymetrix' opening claim construction brief, "a plurality of microarrays on a support permits the hybridization of many different samples (each contained in a separate well) in a single experiment." (*See* D.I. 243, at 6)

[3] In a hybridization experiment, the oligonucleotides that are used to analyze an unknown DNA sample are referred to as "probes," while the unknown DNA sample is referred to as a "target."

> As used herein an 'oligonucleotide array' is an array of regularly situated areas on a solid support wherein different oligos are immobilized, typically by covalent linkage. Each area contains a different oligo whose location is predetermined.

(*See* Ex. 3, at IAFP13430) If an "oligonucleotide array" is repeated multiple times on the same surface, the resulting array is known as an "array of arrays."[4]

The '126 PCT Application discloses such an "array of arrays." This is seen pictorially in Item 43 of Figure 7 of the application:

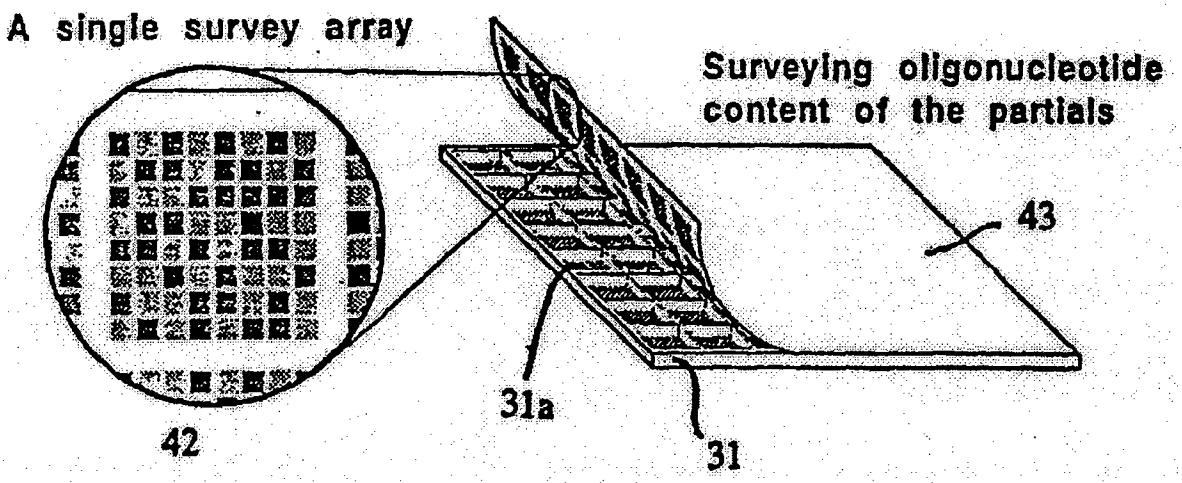

Figure 7a Figure 7b

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(*See id.*, at IAFP13518) Item 42 in Figure 7 is " a single survey array," or "miniaturized survey array," and Item 43 is a single sheet with multiple copies of the single survey array. (*See id.*, at IAFP13445 ("Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is ***surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42.***") (emphasis added)) Each array of the "array of arrays" is a "miniaturized survey array," and thus may contain different elements, or oligonucleotide sequences. Item 42 of Figure 7 pictorially represents that the "single survey array" contains different elements, or oligonucleotide sequences, by employing different shades for the elements shown on it.[5] As discussed above, the '126 PCT Application also discloses that an array has different oligonucelotides immobilized in different locations. (*See id.*, at IAFP13430 ("[A]n 'oligonucleotide array' is an array of regularly situated areas on a solid support wherein different oligos are immobilized . . . ."))

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For manufacturing a survey array, the '126 PCT Application discloses that the sheet that comprises the survey array is a substrate or solid support that can be made of various materials, including glass polymers, latex-coated substrates and silica:

> Suitable substrates or supports for arrays should be non-reactive with reagents to be used in processing, washable under stringent conditions, not interfere with hybridization and not be subject to inordinate non-specific binding. For example, treated glass polymers of various kinds (e.g., polyamide and polyacromorpholide), latex-coated substrates and silica chips.

(*See id.*, at IAFP13433) The '126 PCT Application also discloses that arrays can be made by various techniques, including Affymetrix' photolithography technique. (*See id.*, at IAFP13445)

B. The '126 PCT Application Discloses A "Survey Array" Where An "Array Of Arrays" Is Attached To An Array That Has Been Sectioned.

As one method for analyzing an "array of arrays," the '126 PCT Application discloses a "survey array." In one example of a "survey array," which is depicted in Figure 7, an "array of arrays" is attached to a "partialing array," which is an array that has been sectioned. (*See id.*, at IAFP13518 (Figure 7)) Once attached, each array of the "array of arrays" corresponds to a discrete section of the "partialing array" such that each array is physically separated from each other array. (*See id.*) The text corresponding to Figure 7 further illustrates that the "partialing array" (*i.e.* Item 31) is an array of wells that align with the individual arrays of the "array of arrays" (*i.e.*, Item 43) once attached:

> It is anticipated that surveying will be advantageously accomplished simultaneously for many or all wells of a partialing array by utilizing a sheet on which miniature survey arrays have been 'printed' in a pattern that coincides with the arrangement of wells in the partialing array, in a manner similar to that shown in Figures 6 and 7.

(*See id.*, at IAFP13445) Because each array of the "array of arrays" is physically separated from each other array and no mixing of liquids will occur between the sections, each array can

experience an independent reaction simultaneous to the other arrays.[6] (*See id.*, at IAFP13430 ("Figure 7 shows, schematically, the use of a sheet with a number of miniature survey arrays for simultaneous surveying every well in a partialing array.")).

C. The '126 PCT Application Discloses Several Methods For Sectioning An Array.

The '126 PCT Application discloses several different ways to manufacture an array that physically separates sections of the array, such as a "partialing array." In discussing the manufacture of a "sectioned array," in which sections of the array are also physically separated as in a "partialing array," Drs. Chetverin and Kramer identify use of depressions, lattice structures and gels to prevent exchange of materials between sections:

> "Sectioned arrays" are divided into sections, so that each area is physically separated by mechanical or other means (e.g., a gel) from all the other areas, e.g., depressions on the surface, called a 'well.' There are many techniques apparent to one skilled in the art for preventing the exchange of materials between areas; any such method can be used to make a "sectioned" array, as that term is used herein, even though there might not be a physical wall between areas.

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(*See id.*, at IAFP13432) Figures 2 and 3 pictorially illustrate arrays that use depressions, or wells, (*i.e.*, Item 62) and a lattice framework (*i.e.*, Item 72), respectively, to separate and isolate sections of the array to prevent mixing of liquids:

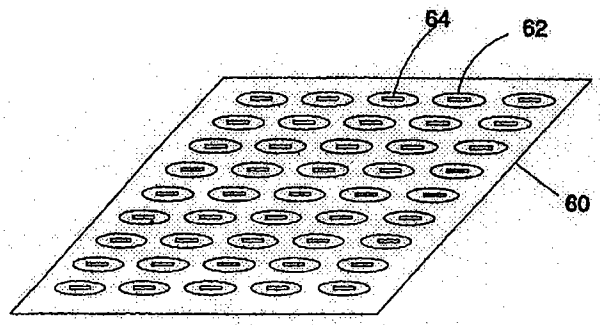

Figure 2 - Sectioned Array

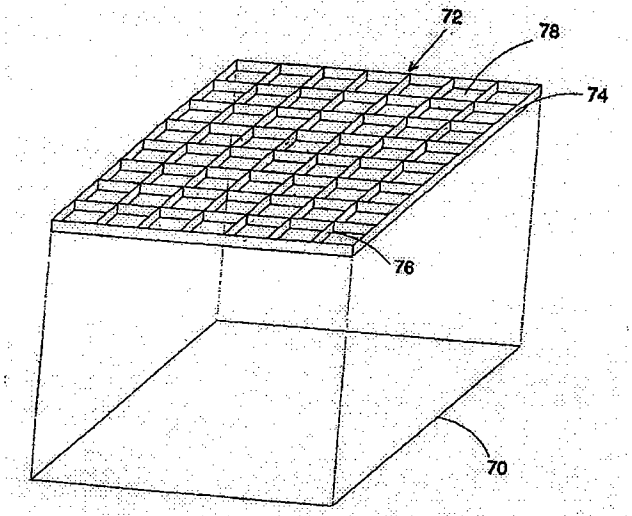

Figure 3

(*See id.*, at IAFP13513-14, IAFP13432)

ARGUMENT

The '531 patent claims are invalid if a single prior art reference, such as the '126 PCT Application, discloses every limitation of those claims, either expressly or inherently. *See Soundscriber Corp. v. United States*, 360 F.2d 954, 960 (1996); *see also Rapoport v. Dement*,

254 F.3d 1053, 1057 (Fed. Cir. 2001). To evaluate anticipation under 35 U.S.C. § 102, a court must first construe the elements of the claims at issue, a question of law, and once the claims have been construed, it must determine whether the claims read on the prior art reference, a question of fact. *See Akamai Tech., Inc. v. Cable & Wireless Internet Serv., Inc.*, 334 F.3d 1186, 1195 n. 4 (Fed. Cir. 2003).

Although anticipation involves a question of fact, summary judgment is still proper here because no reasonable jury could find that the '126 PCT Application does not anticipate the '531 patent claims. *See General Elec. Co. v. Nintendo Co.*, 179 F.3d 1350, 1353 (Fed. Cir. 1999). As will be explained in detail below, the '126 PCT Application is prior art to the '531 patent claims and indisputably discloses each and every limitation of them. Accordingly, the '126 PCT Application anticipates and invalidates claims 1-4 of the '531 patent.

I. THE '126 PCT APPLICATION IS PRIOR ART UNDER 35 U.S.C. § 102(B).

A foreign patent application is prior art under 35 U.S.C. § 102(b) if it was published more than one year before the '531 patent's original filing date. *See* 35 U.S.C. § 102(b). Here, the '126 PCT Application was published on September 2, 1993, which is more than one year before the '531 patent's original filing date — *i.e.*, June 7, 1995. Accordingly, there can be no dispute that the '126 PCT Application is prior art to the '531 patent under 35 U.S.C. § 102(b).[7]

[7] Indeed, in response to Illumina's interrogatory seeking Affymetrix's contentions as to why the '126 PCT Application does not invalidate the asserted claims of the '531 patent, Affymetrix did not contend that the '126 PCT Application is not prior art. (*See* Ex. 5, at 3)

II. THE '126 PCT APPLICATION DISCLOSES EACH AND EVERY LIMITATION OF THE ASSERTED CLAIMS OF THE '531 PATENT.

The '126 PCT Application discloses each and every limitation of the asserted claims of the '531 patent. To illustrate this point, Illumina attaches below a table for each asserted claim of the '531 patent that identifies representative language and figures of the '126 PCT Application that disclose the limitations of those claims. (*See also* Ex. 1) Following the table for each claim, Illumina further discusses each limitation of such claim.

A. The '126 PCT Application Discloses Each And Every Limitation Of Claim 1 Of The '531 Patent.

'531 Patent, Claim 1	The '126 PCT Application
A method of making a biological chip plate comprising the steps of:	"Our invention includes methods of using sectioned arrays to sort mixtures of nucleic acid strands, either RNA or DNA." (*See* Ex. 3, at IAFP13428)
(a) providing a body comprising a plurality of wells defining spaces;	"Referring to Figure 7, ***partialing array 31, comprising an array of wells 31a,*** is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42." (*See* Ex. 3, at IAFP13432 (emphasis added))
(b) providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner;	"Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is surveyed using ***sheet 43, having printed thereon an array of miniaturized survey arrays 42.***" (*See* Ex. 3, at IAFP13432 (emphasis added), IAFP13518 (Figure 7)) The '126 PCT Application discloses that each array contained on the "array of arrays" contains more than one oligonucleotide sequence, or probe. (*See id.*, at IAFP13518 (Figure 7), IAFP13430) "As used herein an 'oligonucleotide array' is ***an array of regularly situated areas on a solid support wherein different oligos are immobilized,*** typically by covalent linkage. Each area contains a different oligo whose location is predetermined." (*See id.*, at IAFP13430 (emphasis added))
(c) attaching the wafer to the body so that the probe arrays are exposed to the spaces of the wells.	"Referring to Figure 7, partialing array 31, comprising an array of wells 31 a, is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42. ***The pattern of arrays 42 corresponds to the pattern of wells 31a, whereby all wells 31a can be surveyed simultaneously.***" *See* Ex. 3, at IAFP13445 (emphasis added), IAFP13517-18 (Figures 6 and 7))

1. The '126 PCT Application discloses "a method for making a biological chip plate."

The preamble of claim 1 of the '531 patent recites a "method for making a biological chip plate." To the extent that the preamble adds a limitation to claim 1, the '126 PCT Application clearly discloses a method for making a biological chip plate. Specifically, the '126 PCT Application states that its invention "includes methods of using sectioned arrays to sort mixtures of nucleic acid strands, either RNA or DNA." (*See* Ex. 3, at IAFP13428) Because nucleic acid strands are biological material, there can be no dispute that the '126 PCT Application discloses a method for making a biological chip plate.

2. The '126 PCT Application discloses "providing a body comprising a plurality of wells defining spaces."

The first limitation of claim 1 is "providing a body comprising a plurality of wells defining spaces." Neither party disputes construction of this limitation, which recites a structure with two or more wells that define separate spaces.

As discussed previously, the '126 PCT Application discloses a structure known as a "survey array," which includes a structure known as a "partialing array." A "partialing array" is a structure that contains "wells" that define separate spaces:

> Referring to Figure 7, ***partialing array 31, comprising an array of wells 31a***, is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42. The pattern of arrays 42 corresponds to the pattern of wells 31a, whereby all wells 31a can be surveyed simultaneously.

(*See id.*, at IAFP13445 (emphasis added)) Item 31a of Figure 7, reproduced above, pictorially illustrates a "partialing array," and shows that it is a "body comprising a plurality of wells

defining spaces."[8] (*See id.*, at IAFP13518) The '126 PCT Application thus discloses the "body" of claim 1, which Affymetrix apparently does not dispute. (*See* Ex. 5, at 3 (not identifying the "body" limitation as a '531 patent limitation missing from the '126 PCT Application)

3. *The '126 PCT Application discloses "providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner."*

The second limitation of claim 1 is "providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner." The parties dispute the construction of the terms "probe array" and "arranged in a spacially defined and physically addressable manner," and have proffered the following constructions of these terms:

Illumina's "probe array" construction	Affymetrix's "probe array" construction
a collection of probes, at least two of which are different, that are surface-immobilized (chemically-linked) to a single surface	a collection of surface-immobilized molecules, at least two of which are different, that can be recognized by a particular target

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Illumina's "spacially defined" construction	Affymetrix's "spacially defined" construction
each probe in an array is placed in a different pre-determined location on the surface	located in a particular location and capable of being accessed

(*See* D.I. 240, at 21, 24) Accordingly, for this limitation, Illumina proposes a construction whereby the wafer has multiple probe arrays on its surface, and the probes of each probe array, at least two of which are different, are chemically linked to the surface of the array in predetermined locations. Affymetrix, on the other hand, seeks a construction whereby the wafer has multiple probe arrays, and the probes of each array are merely attached at a particular location. Regardless of which construction that the Court adopts, however, this limitation reads on the '126 PCT Application.

As discussed above, the '126 PCT Application discloses a "survey array" that, in addition to a "partialing array," contains an "array of arrays," which is a sheet with multiple oligonucleotide arrays that are immobilized on its surface. (*See* Ex. 3, at IAFP13518 (Figure 7);

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Further, each oligonucleotide array of the "array of arrays" contains more than one different oligonucleotide sequence in predetermined locations:

> As used herein an 'oligonucleotide array' is an array of regularly situated areas on a solid support wherein different oligos are immobilized, typically by covalent linkage. Each area contains a different oligo whose location is predetermined.

(*See* Ex. 3, at IAFP13430, IAFP13518 (Figure 7);

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The sheet on which the oligonucleotide arrays are immobilized can take numerous forms, including a substrate or solid support that is made from glass polymers, latex-coated substrates and silica. (*See* Ex. 3, at IAFP13433) In other words, the '126 PCT

Application discloses an "array of arrays" on the surface of a wafer where each probe array of the "array of arrays" contains at least two different probes.

Although the parties dispute whether or not claim 1 requires that the probes must be chemically linked to the surface of the substrate and placed at predetermined locations, this dispute is immaterial for this Motion because the '126 PCT Application still discloses the requirements of this claim regardless of how the Court resolves the claim construction issues. More particularly, the '126 PCT Application discloses that oligonucleotides, or probes, may be attached to an array through chemical bonding (*i.e.*, covalent linkage) and at predetermined locations:

> As used herein an 'oligonucleotide array' is an array of regularly situated areas on a solid support wherein different oligos are immobilized, typically ***by covalent linkage***. Each area contains a different oligo whose ***location is predetermined***.

(*See* Ex. 3, at IAFP13430 (emphasis added)) Thus, whether the Court construes the claim to require chemical linking at predetermined locations or not, the '126 PCT Application discloses this limitation.

4. The '126 PCT Application discloses "attaching the wafer to the body so that the probe arrays are exposed to the spaces of the wells."

The final limitation of claim 1 is "attaching the wafer to the body so that the probe arrays are exposed to the spaces of the wells." The parties do not dispute the construction of this limitation — it requires that the "body" (*i.e.*, the structure with the wells) must be attached to the "wafer" (*i.e.*, the structure with the probe arrays on it) so that the probe arrays align with and are exposed to the spaces of the different wells.

A "survey array" of the '126 PCT Application, as pictorially represented by Figure 7, is a structure where a "partialing array" is attached to an "array of arrays" such that each array of the "array of arrays" aligns with a section of the "partialing array":

> It is anticipated that surveying will be advantageously accomplished simultaneously for many or all wells of a partialing array by utilizing a sheet on which miniature survey arrays have been 'printed' in a pattern that coincides with the arrangement of wells in the partialing array, in a manner similar to that shown in Figures 6 and 7. Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42. ***The pattern of arrays 42 corresponds to the pattern of wells 31a, whereby all wells 31a can be surveyed simultaneously.***

(*See* Ex. 3, at IAFP13445 (emphasis added), IAFP13518 (Figure 7)) As disclosed above, this attachment allows for simultaneous, independent reactions for each array to occur in each section.[9]

In sum, there can be no dispute that each limitation of claim 1 of the '531 patent is disclosed in the '126 PCT Application, and therefore anticipates it.

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B. The '126 PCT Application Discloses Each And Every Limitation Of Claim 3 Of The '531 Patent.

'531 Patent, Claim 3	The '126 PCT Application
A method for making a biological chip plate comprising the steps of providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner	"Referring to Figure 7, partialing array 31, comprising an array of wells 31a, is surveyed using ***sheet 43, having printed thereon an array of miniaturized survey arrays 42***." (*See* Ex. 3, at IAFP13432 (emphasis added), IAFP13518 (Figure 7)) The '126 PCT Application discloses that each array contained on the "array of arrays" contains more than one oligonucleotide sequence, or probe. (*See id.*, at IAFP13518 (Figure 7), IAFP13430) "As used herein an 'oligonucleotide array' is ***an array of regularly situated areas on a solid support wherein different oligos are immobilized***, typically by covalent linkage. Each area contains a different oligo whose location is predetermined." (*See id.*, at IAFP13430 (emphasis added))
and applying a material resistant to the flow of a liquid sample so as to surround the probe arrays, thereby creating test wells.	"Referring to Figure 7, partialing array 31, comprising an array of wells 31 a, is surveyed using sheet 43, having printed thereon an array of miniaturized survey arrays 42. The pattern of arrays 42 corresponds to the pattern of wells 31a, whereby all wells 31a can be surveyed simultaneously." (*See* Ex. 3, at IAFP13432 (emphasis added), IAFP13518 (Figure 7)) The '126 PCT Application discloses a "survey array," which is a structure in which a "partialing array" is attached to an "array of arrays" such that each array aligns with, and is exposed to, a section of the "partialing array." (*See id.*, at IAFP13445, IAFP13517-18 (showing Figures 6 and 7 in which Items 31 and 43 are attached such that each "well" is aligned with an array that physically separates it from another array) "The sectioned array can also be created by ***applying a lattice to the solid support and bonding it to the surface so that each area is surrounded by impermeable walls***." (*See id.*, at IAFP13432, IAFP13514 (showing Figure 3 where a lattice structure physically separates each section of the array to prevent fluid transfer between sections)

1. *The '126 PCT Application discloses "providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner."*

Claim 3 of the '531 patent claims a "method for making a biological chip plate," and the first limitation is "providing a wafer comprising on its surface a plurality of probe arrays, each probe array comprising a collection of probes, at least two of which are different, arranged in a spacially defined and physically addressable manner." This limitation is the same as the limitation for claim 1 discussed *supra*. (*See* Section II.A.3) Accordingly, for the reasons discussed above, there can be no dispute that the '126 PCT Application discloses this limitation.

2. *The '126 PCT Application discloses "applying a material resistant to the flow of a liquid sample so as to surround the probe arrays, thereby creating test wells."*

The second limitation of claim 3 is "applying a material resistant to the flow of a liquid sample so as to surround the probe arrays, thereby creating test wells." The parties do not dispute construction of this limitation — it requires applying a material to surround and separate at least two probe arrays to create test wells, which will resist the flow of liquid between the probe arrays.

As discussed previously, Item 31 of Figure 7 includes a lattice structure that surrounds and separates physically each array (*i.e.*, Item 42) of the "array of arrays" (*i.e.*, Item 43) to which it is attached.[10] (*See* Ex. 3, at IAFP13445, IAFP13432 ("Sectioned arrays" are divided into sections, so that each area is physically separated by mechanical or other means (e.g., a gel) from all the other areas, e.g., depressions on the surface, called a 'well.' There are

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many techniques apparent to one skilled in the art ***for preventing the exchange of materials between areas*** . . . .") (emphasis added)) As one method for sectioning an array so as to prevent transfer of liquids between sections, Figure 3 also illustrates use of a lattice structure made of "impermeable walls" bonded to the array. (*See* Ex. 3, at IAFP13514 (Figure 3), IAFP13432 ("The sectioned array can also be created by applying a lattice to the solid support and bonding it to the surface so that each area is surrounded by impermeable walls. An exploded perspective view of such a sectioned array is shown in Figure 3.")) REDACTED

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Accordingly, there can be no dispute that the '126 PCT Application discloses this limitation.

In sum, each limitation of claim 3 of the '531 patent reads on the '126 PCT Application. Therefore, the '126 PCT Application anticipates and renders invalid claim 3 of the '531 patent.

C. The '126 PCT Application Discloses Each And Every Limitation Of Claims 2 and 4 Of The '531 Patent.

'531 Patent, Claims 2, 4	The '126 PCT Application
The method of claim 1 [3] wherein the probes are DNA or RNA molecules.	"Our invention includes methods of using sectioned arrays to sort mixtures of nucleic acid strands, either RNA or DNA." (*See* Ex. 3, at IAFP13428 , IAFP13482 (claiming that the oligonucleotides of the array consist of "deoxyribonucleotides" and "ribonucleotides")

Claims 2 and 4 of the '531 patent are dependent on claims 1 and 3, respectively, and add the same limitation — *i.e.*, "the probes are DNA or RNA molecules." There can be no

dispute that the '126 PCT Application discloses oligonucleotide arrays and arrays of those arrays in which the probes are DNA or RNA molecules:

> In an oligonucleotide array each oligo probe is immobilized on a solid support at a different predetermined position. The array allows one to simultaneously survey all the oligo segments in a DNA fragment strand.

(*See* Ex. 3, at IAFP13426, IAFP13428 ("Our invention includes methods of using sectioned arrays to sort mixtures of nucleic acid strands, either RNA or DNA."), IAFP13482 (claiming that the oligonucleotides of an array consist of "deoxyribonucleotides" or "ribonucleotides")) Accordingly, because the '126 PCT Application also discloses each and every limitation of claims 1 and 3, the '126 PCT Application anticipates claims 2 and 4 of the '531 patent.

CONCLUSION

For all the reasons set forth herein, Illumina respectfully requests that this Court grant its motion for summary judgment and enter its proposed order granting summary judgment that claims 1-4 of the '531 patent are invalid under 35 U.S.C. § 102.

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